

In the Claims:**Claim 1 (currently amended):**

- 1 1. A method for making a series of nanoscale microstructures comprising the steps of:
- 2 (1) forming a chiral block copolymer containing a first polymer ~~blocks~~ block of a first
- 3 ~~polymers polymer~~ and a second polymer ~~blocks~~ block of a second ~~polymers polymer~~,
- 4 wherein at least said first polymer is a chiral polymer exhibiting chirality, and said
- 5 first and second polymer blocks are capable of being subject to a micro-phase
- 6 separation and said first ~~polymers have~~ polymer has a volume fraction ranging from
- 7 10 to 90%;
- 8 (2) causing a microphase separation in said chiral block copolymer;
- 9 wherein said first polymer is poly(L-lactide) and said second polymer is selected from the
- 10 group consisting of polystyrene and pol(4-vinylpyridine), further wherein said chiral block
- 11 copolymer is poly(styrene)-poly(L-lactide) (PS-PLLA) chiral block copolymer when said
- 12 second polymer is polystyrene and poly(4-vinylpyridine)-poly(L-lactide) (P4VP-PLLA)
- 13 chiral block copolymer when said second polymer is pol(4-vinylpyridine);
- 14 further wherein said poly(styrene)-poly(L-lactide) (PS-PLLA) chiral block copolymer is
- 15 prepared using a polymerization process comprising the following steps:
- 16 (a) mixing styrene with BPO and 4-OH-TEMPO to form 4-hydroxy-TEMPO-terminated
- 17 polystyrene; and
- 18 (b) mixing said 4-hydroxy-TEMPO-terminated polystyrene with L-lactide in an organic
- 19 solvent to form said poly(styrene)-poly(L-lactide) chiral block copolymer.

Claim 2 (original):

- 1 2. The method for making a series of nanoscale microstructures according to claim 1, wherein
2 said chiral block copolymer is poly(styrene)-poly(L-lactide) (PS-PLLA) chiral block
3 copolymer, said first polymer is poly(L-lactide), and said second polymer is polystyrene.

Claim 3 (original):

- 1 3. The method for making a series of nanoscale microstructures according to claim 1, wherein
2 said chiral block copolymer is poly(4-vinylpyridine)-poly(L-lactide) (P4VP-PLLA) chiral
3 block copolymer, said first polymer is poly(L-lactide), and said second polymer is poly(4-
4 vinylpyridine).

Claim 4 (currently amended):

- 1 4. The method for making a series of nanoscale microstructures according to claim 1, wherein
2 said first polymer blocks polymers have polymer has a volume fraction ranging from about
3 20% to about 49%.

Claim 5 (original):

- 1 5. The method for making a series of nanoscale microstructures according to claim 1, wherein
2 said nanoscale microstructures are a series of helical microstructures.

Claim 6 (original):

- 1 6. The method for making a series of nanoscale microstructures according to claim 1, wherein
2 said nanoscale microstructures are a series of cylindrical microstructures each with a
3 hexagonal cross-section.

Claim 7 (canceled):Claim 8 (original):

- 1 8. The method for making a series of nanoscale microstructures according to claim 7 1, wherein

said polymerization process is a living polymerization in which monomers are sequentially added to a polymerization mixture.

Claim 9 (previously presented):

9. The method for making a series of nanoscale microstructures according to claim 1, wherein said phase separation of said chiral block copolymer is achieved through crystallization.

Claim 10 (currently amended):

10. An object article of manufacture containing a series of repeating nanoscale microstructures formed in a substrate which is formed using a process comprising the steps of:

(1) forming a chiral block copolymer containing a first polymer block of a first ~~polymers~~ polymer and a second polymer block of a second ~~polymers~~ polymer, wherein at least said first polymer is a chiral polymer exhibiting chirality, and said first and second polymer blocks are capable of being subject to a micro-phase separation and said first ~~polymers have~~ polymer has a volume fraction ranging from 10 to 90%;

(2) causing a microphase separation in said chiral block copolymer;

wherein said first polymer is poly(L-lactide) and said second polymer is selected from the group consisting of polystyrene and pol(4-vinylpyridine), further wherein said chiral block copolymer is poly(styrene)-poly(L-lactide) (PS-PLLA) chiral block copolymer when said second polymer is polystyrene and poly(4-vinylpyridine)-poly(L-lactide) (P4VP-PLLA) chiral block copolymer when said second polymer is pol(4-vinylpyridine);

further wherein said poly(styrene)-poly(L-lactide) (PS-PLLA) chiral block copolymer is prepared using a polymerization process comprising the following steps:

(a) mixing styrene with BPO and 4-OH-TEMPO to form 4-hydroxy-TEMPO-terminated

17 polystyrene; and

18 (b) mixing said 4-hydroxy-TEMPO-terminated polystyrene with L-lactide in an organic
19 solvent to form said poly(styrene)-poly(L-lactide) chiral block copolymer.

Claim 11 (currently amended):

1 11. The object article of manufacture according to claim 10, wherein said block copolymer is a
2 poly(styrene)-poly(L-lactide) chiral block copolymer, and said first polymer is poly(L-
3 lactide) and said second polymer is polystyrene.

Claim 12 (currently amended):

1 12. The object article of manufacture according to claim 10 wherein said block copolymer is a
2 poly(4-vinylpyridine)-poly(L-lactide) chiral block copolymer, and said first polymer is
3 poly(L-lactide) blocks and said second polymer is poly(4-vinylpyridine).

Claim 13 (currently amended):

1 13. The object article of manufacture according to claim 10 wherein said first polymers have
2 polymer has a volume fraction ranging from about 20% to about 49%.

Claim 14 (currently amended):

1 14. The object article of manufacture according to claim 10 wherein said nanoscale
2 microstructures are a series of helical microstructures.

Claim 15 (currently amended):

1 15. The object article of manufacture according to claim 10 wherein said nanoscale
2 microstructures are a series of cylindrical microstructures each with a hexagonal crossection.

Claim 16 (canceled):

Claim 17 (currently amended):

1 17. The object article of manufacture according to claim ~~16~~ 10 wherein said polymerization
2 process is a living polymerization in which monomers are sequentially added to a
3 polymerization mixture.

Claim 18 (currently amended):

1 18. The object article of manufacture according to claim 10 wherein said phase separation of
2 said chiral block copolymer is achieved through crystallization.

Claims 19-21 (canceled):